

1. (amended) A peptide having an amino acid sequence of:

N(H)(R')-X' Z'(CORE PEPTIDE) Z'' X''-CO-R''

in which:

- a) N(H)(R') is the amino terminal, wherein R' is acetyl or hydrogen; and CO-R'' is the carboxyl terminal, wherein R'' is NH<sub>2</sub> or OH;
- b) X' is present or absent, and, if present, is an L-amino acid or a di- or tripeptide of D or L-amino acids selected from the group consisting of Y, W, and F, provided that no amino acid is selected more than once;
- c) X'' is present or absent, and if present, is an L-amino acid selected from the group of consisting of Y, W, F, I, L or a dipeptide of D or L-amino acids selected from the group consisting of L and I;
- d) Z' and Z'' are amino acids that are linked to each other so that the peptide is a cyclic peptide; and 530/11
- e) the CORE PEPTIDE is selected from the group of peptides consisting of

*-N-Q-+		*-N-Q-L-+	
*-N-Q-L-I-+	<u>SEQ ID NO:7</u>	*-N-Q-L-I-K-+	<u>SEQ ID NO:8</u>
*-N-Q-I-+		*-N-Q-I-K-+	<u>SEQ ID NO:9</u>
*-S-N-+		*-S-N-Q-L-+	<u>SEQ ID NO:10</u>
*-S-N-Q-L-I-+	<u>SEQ ID NO:11</u>	*-S-N-Q-L-I-K-+	<u>SEQ ID NO:12</u>
*-S-N-Q-I-+	<u>SEQ ID NO:13</u>	*-S-N-Q-I-K-+	<u>SEQ ID NO:14</u>
*-N-S-N-+		*-N-S-N-Q-+	<u>SEQ ID NO:15</u>
*-N-S-N-Q-L-+	<u>SEQ ID NO:16</u>	*-N-S-N-Q-L-I-+	<u>SEQ ID NO:17</u>
*-N-S-N-Q-L-I-K-+	<u>SEQ ID NO:18</u>		
*-N-S-N-Q-I-K-+	<u>SEQ ID NO:4</u>		
*-N-S-N-Q-I-+	<u>SEQ ID NO:1</u>	*-K-N-S-N-+	<u>SEQ ID NO:20</u>
*-K-N-S-N-Q-+	<u>SEQ ID NO:21</u>	*-K-N-S-N-Q-L-+	<u>SEQ ID NO:22</u>
*-K-N-S-N-Q-L-I-+	<u>SEQ ID NO:23</u>		
*-K-N-S-N-Q-L-I-K-+	<u>SEQ ID NO:2</u>		
*-K-N-S-N-Q-I-+	<u>SEQ ID NO:3</u>		
*-K-N-S-N-Q-I-K-+	<u>SEQ ID NO:4</u>		
[*-N-S-N-Q-I-+]		*-E-N-K-+	

<u>*-E-N-K-E-+</u>	<u>SEQ ID NO:24</u>	<u>*-E-N-K-E-A-+</u>	<u>SEQ ID NO:25</u>
<u>*-L-E-N-K-+</u>	<u>SEQ ID NO:26</u>	<u>*-L-E-N-K-E-+</u>	<u>SEQ ID NO:27</u>
<u>*-L-E-N-K-E-A-+</u>	<u>SEQ ID NO:28</u>	<u>*-K-L-E-N-K-+</u>	<u>SEQ ID NO:29</u>
<u>*-K-L-E-N-K-E-+</u>	<u>SEQ ID NO:30</u>		
<u>*-K-L-E-N-K-E-A-+</u>	<u>SEQ ID NO:5</u>		
<u>*-S-G-Q-+</u>		<u>*-S-G-Q-V-+</u>	<u>SEQ ID NO:31</u>
<u>*-S-G-Q-V-L-+</u>	<u>SEQ ID NO:32</u>	<u>*-D-S-G-Q-+</u>	<u>SEQ ID NO:33</u>
<u>*-D-S-G-Q-V-+</u>	<u>SEQ ID NO:34</u>	<u>*-D-S-G-Q-V-L-+</u>	<u>SEQ ID NO:35</u>
<u>*-S-D-S-G-Q-+</u>	<u>SEQ ID NO:36</u>	<u>*-S-D-S-G-Q-V-+</u>	<u>SEQ ID NO:37</u>
<u>*-S-D-S-G-Q-V-L-+</u>	<u>SEQ ID NO:38</u>		
<u>*-L-S-D-S-G-Q-+</u>	<u>SEQ ID NO:39</u>		
<u>*-L-S-D-S-G-Q-V-+</u>	<u>SEQ ID NO:40</u> and		
<u>*-L-S-D-S-G-Q-V-L-</u>	<u>SEQ ID NO:6</u> ,		
+			

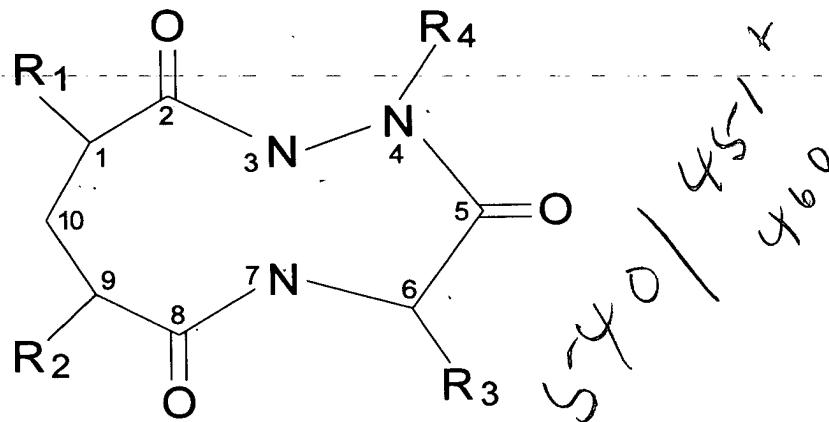
wherein \* and + designate the amino and carboxyl termini, respectively, and the single letters designate L-amino acids according to the single letter code or wherein \* and + designate the carboxyl and amino termini, respectively and the single letters designate D-amino acids according to the single letter code.

2. (amended) The peptide of claim 1, in which the CORE PEPTIDE is selected from the group consisting of \*-K-N-S-N-Q-L-I-K-+ (SEQ ID NO:2), \*-K-N-S-N-Q-I-K-+ (SEQ ID NO:4), \*-N-S-N-Q-L-I-+ (SEQ ID NO:17), \*-N-S-N-Q-I-+ (SEQ ID NO:1), \*-L-S-D-S-G-Q-V-L-+ (SEQ ID NO:6), and \*-K-L-E-N-K-E-A-+ (SEQ ID NO:5), wherein \* and + designate the amino and carboxyl termini, respectively, and the single letters designate L-amino acids according to the single letter code, or wherein \* and + designate the carboxyl and amino termini, respectively and the single letters designate D-amino acids according to the single letter code.

3. (amended) The peptide of claim 1, in which the CORE PEPTIDE is

*G*  
\* - N - S - N - Q - I - + (SEQ ID NO:1), wherein \* and + designate the amino and carboxyl termini, respectively, and the single letters designate L-amino acids according to the single letter code.

6. (amended) A macrocyclic peptidomimetic corresponding to a tetrameric, pentameric or hexameric peptide, having a 10-member ring according to the formula:



*G*  
wherein:

$R_1$  is the  $\alpha$ -carbon, amino moiety and side chain of the amino terminal amino acid of a tetrameric peptidomimetic or the amino terminal amino acid and the  $\alpha$ -carbon, amine and side chain of the second amino acid of a pentameric or hexameric peptidomimetic;

$R_2$  is the side-chain of the second amino acid of a tetrameric or pentameric peptidomimetic or the side-chain of the third amino acid of a pentameric or hexameric peptidomimetic;

$R_3$  is the side chain of the third amino acid of a tetrameric or pentameric peptidomimetic or the fourth amino acid of a pentameric or hexameric peptidomimetic; and

$R_4$  and 4-N together are the carboxyl terminal amino acid of a tetrameric or pentameric peptidomimetic, or the carboxyl terminal two amino acids of a pentameric or hexameric peptidomimetic; and

the sequence of amino acids to which  $R_1$  through  $R_4$  correspond are selected from the following sequences:

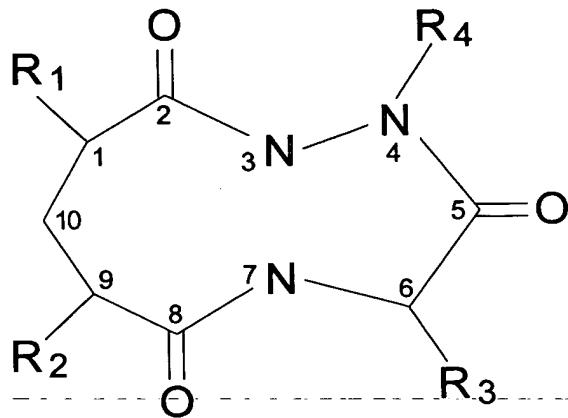
<u>*-N-Q-L-I-+</u>	<u>SEQ ID NO:8</u>	<u>*-N-Q-L-I-K-+</u>	<u>SEQ ID NO:8</u>
<u>*-N-Q-I-K-+</u>	<u>SEQ ID NO:9</u>	<u>*-S-N-Q-L-+</u>	<u>SEQ ID NO:10</u>
<u>*-S-N-Q-L-I-+</u>	<u>SEQ ID NO:11</u>	<u>*-S-N-Q-L-I-K-+</u>	<u>SEQ ID NO:12</u>
<u>*-S-N-Q-I-+</u>	<u>SEQ ID NO:13</u>	<u>*-S-N-Q-I-K-+</u>	<u>SEQ ID NO:14</u>
<u>*-N-S-N-Q-+</u>	<u>SEQ ID NO:15</u>	<u>*-N-S-N-Q-L-+</u>	<u>SEQ ID NO:16</u>
<u>*-N-S-N-Q-L-I-+</u>	<u>SEQ ID NO:17</u>	<u>*-N-S-N-Q-I-K-+</u>	<u>SEQ ID NO:19</u>
<u>*-N-S-N-Q-I-+</u>	<u>SEQ ID NO:1</u>	<u>*-K-N-S-N-+</u>	<u>SEQ ID NO:20</u>
<u>*-K-N-S-N-Q-+</u>	<u>SEQ ID NO:21</u>	<u>*-K-N-S-N-Q-L-+</u>	<u>SEQ ID NO:22</u>
<u>*-K-N-S-N-Q-I-+</u>	<u>SEQ ID NO:3</u>	<u>[*-N-S-N-Q-I-+]</u>	
<u>*-E-N-K-E-+</u>	<u>SEQ ID NO:24</u>	<u>*-E-N-K-E-A-+</u>	<u>SEQ ID NO:25</u>
<u>*-L-E-N-K-+</u>	<u>SEQ ID NO:26</u>	<u>*-L-E-N-K-E-+</u>	<u>SEQ ID NO:27</u>
<u>*-L-E-N-K-E-A-+</u>	<u>SEQ ID NO:28</u>	<u>*-K-L-E-N-K-+</u>	<u>SEQ ID NO:29</u>
<u>*-K-L-E-N-K-E-+</u>	<u>SEQ ID NO:30</u>	<u>*-S-G-Q-V-+</u>	<u>SEQ ID NO:31</u>
<u>*-S-G-Q-V-L-+</u>	<u>SEQ ID NO:32</u>	<u>*-D-S-G-Q-+</u>	<u>SEQ ID NO:33</u>
<u>*-D-S-G-Q-V-+</u>	<u>SEQ ID NO:34</u>	<u>*-D-S-G-Q-V-L-+</u>	<u>SEQ ID NO:35</u>
<u>*-S-D-S-G-Q-+</u>	<u>SEQ ID NO:36</u>	<u>*-S-D-S-G-Q-V-+</u>	<u>SEQ ID NO:37</u>
		<u>*-L-S-D-S-G-Q-+</u>	<u>SEQ ID NO:39,</u>

and

wherein \* denotes the amino terminal and + the carboxyl terminal.

7. (amended) The macrocyclic peptidomimetic of claim 6, in which the amino acids are selected from the sequences: \*-N-S-N-Q-+ (SEQ ID NO:15), \*-N-S-N-Q-I-+ (SEQ ID NO:1), wherein 4-N and R<sub>4</sub> together correspond to the C-terminal Q-I dipeptide, and \*-K-N-S-N-Q-I-+ (SEQ ID NO:3).

17. (amended) The method of claim 14, wherein the active compound is a macrocyclic peptidomimetic corresponding to a tetrameric, pentameric or hexameric peptide, having a 10-member ring according to the formula:



wherein:

$R_1$  is the  $\alpha$ -carbon, amino moiety and side chain of the amino terminal amino acid of a tetrameric peptidomimetic or the amino terminal amino acid and the  $\alpha$ -carbon, amine and side chain of the second amino acid of a pentameric or hexameric peptidomimetic;

$R_2$  is the side-chain of the second amino acid of a tetrameric or pentameric peptidomimetic or the side-chain of the third amino acid of a pentameric or hexameric peptidomimetic;

$R_3$  is the side chain of the third amino acid of a tetrameric or pentameric peptidomimetic or the fourth amino acid of a pentameric or hexameric peptidomimetic; and

$R_4$  and 4-N together are the carboxyl terminal amino acid of a tetrameric or pentameric peptidomimetic, or the carboxyl terminal two amino acids of a pentameric or hexameric peptidomimetic; and

the sequence of amino acids to which  $R_1$  through  $R_4$  correspond are selected from the following sequences:

$^*N-Q-L-I-+$	<u>SEQ ID NO:8</u>	$^*N-Q-L-I-K-+$	<u>SEQ ID NO:8</u>
$^*N-Q-I-K-+$	<u>SEQ ID NO:9</u>	$^*S-N-Q-L-+$	<u>SEQ ID NO:10</u>
$^*S-N-Q-L-I-+$	<u>SEQ ID NO:11</u>	$^*S-N-Q-L-I-K-+$	<u>SEQ ID NO:12</u>
$^*S-N-Q-I-+$	<u>SEQ ID NO:13</u>	$^*S-N-Q-I-K-+$	<u>SEQ ID NO:14</u>
$^*N-S-N-Q-+$	<u>SEQ ID NO:15</u>	$^*N-S-N-Q-L-+$	<u>SEQ ID NO:16</u>

<u>*-N-S-N-Q-L-I-+</u>	<u>SEQ ID NO:17</u>	<u>*-N-S-N-Q-I-K-+</u>	<u>SEQ ID NO:19</u>
<u>*-N-S-N-Q-I-+</u>	<u>SEQ ID NO:1</u>	<u>*-K-N-S-N-+</u>	<u>SEQ ID NO:20</u>
<u>*-K-N-S-N-Q-+</u>	<u>SEQ ID NO:21</u>	<u>*-K-N-S-N-Q-L-+</u>	<u>SEQ ID NO:22</u>
<u>*-K-N-S-N-Q-I-+</u>	<u>SEQ ID NO:3</u>	<u>[*-N-S-N-Q-I-+]</u>	
<u>*-E-N-K-E-+</u>	<u>SEQ ID NO:24</u>	<u>*-E-N-K-E-A-+</u>	<u>SEQ ID NO:25</u>
<u>*-L-E-N-K-+</u>	<u>SEQ ID NO:26</u>	<u>*-L-E-N-K-E-+</u>	<u>SEQ ID NO:27</u>
<u>*-L-E-N-K-E-A-+</u>	<u>SEQ ID NO:28</u>	<u>*-K-L-E-N-K-+</u>	<u>SEQ ID NO:29</u>
<u>*-K-L-E-N-K-E-+</u>	<u>SEQ ID NO:30</u>	<u>*-S-G-Q-V-+</u>	<u>SEQ ID NO:31</u>
<u>*-S-G-Q-V-L-+</u>	<u>SEQ ID NO:32</u>	<u>*-D-S-G-Q-+</u>	<u>SEQ ID NO:33</u>
<u>*-D-S-G-Q-V-+</u>	<u>SEQ ID NO:34</u>	<u>*-D-S-G-Q-V-L-+</u>	<u>SEQ ID NO:35</u>
<u>*-S-D-S-G-Q-+</u>	<u>SEQ ID NO:36</u>	<u>*-S-D-S-G-Q-V-+</u>	<u>SEQ ID NO:37</u>
		<u>*-L-S-D-S-G-Q-+</u>	<u>SEQ ID NO:39</u> ,
	and		

wherein \* denotes the amino terminal and + the carboxyl terminal.

18. (amended) A method of suppressing a human, CD4 T-cell immune response comprising administering to a subject having a medical condition that is ameliorated by the suppression of a CD4 T-cell mediated immune response, an effective amount of a peptide having an amino acid sequence of:



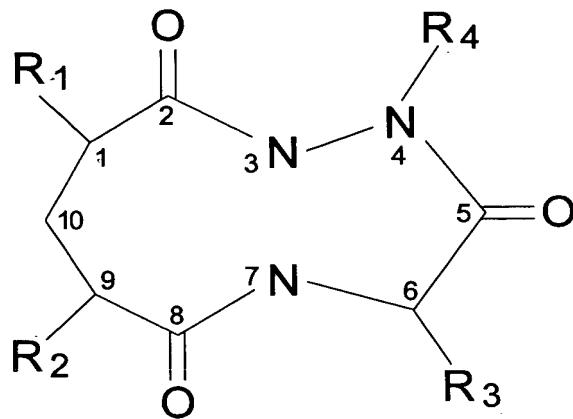
in which:

- a) N(H)(R') is the amino terminal, wherein R' is acetyl or hydrogen; and CO-R'' is the carboxyl terminal, wherein R'' is NH<sub>2</sub> or OH;
- b) X' is present or absent, and, if present, is an L-amino acid or a di- or tripeptide of D or L-amino acids selected from the group consisting of Y, W, and F, provided that no amino acid is selected more than once;
- c) X'' is present or absent, and if present, is an L-amino acid selected from the group of consisting of Y, W, F, I, L or a dipeptide of D or L-amino acids selected from the group consisting of L and I;
- d) Z' and Z'' are amino acids that are linked to each other so that the peptide is a cyclic peptide; and
- e) the CORE PEPTIDE is selected from the group of peptides consisting of

*-N-Q-+	*-N-Q-L-+
*-N-Q-L-I-+ <u>SEQ ID NO:7</u>	*-N-Q-L-I-K-+ <u>SEQ ID NO:8</u>
*-N-Q-I-+	*-N-Q-I-K-+ <u>SEQ ID NO:9</u>
*-S-N-+	*-S-N-Q-L-+ <u>SEQ ID NO:10</u>
*-S-N-Q-L-I-+ <u>SEQ ID NO:11</u>	*-S-N-Q-L-I-K-+ <u>SEQ ID NO:12</u>
*-S-N-Q-I-+ <u>SEQ ID NO:13</u>	*-S-N-Q-I-K-+ <u>SEQ ID NO:14</u>
*-N-S-N-+ <u>SEQ ID NO:15</u>	*-N-S-N-Q-+ <u>SEQ ID NO:16</u>
*-N-S-N-Q-L-+ <u>SEQ ID NO:17</u>	*-N-S-N-Q-L-I-+ <u>SEQ ID NO:18</u>
*-N-S-N-Q-L-I-K-+ <u>SEQ ID NO:19</u>	*-N-S-N-Q-I-+ <u>SEQ ID NO:20</u>
*-N-S-N-Q-I-K-+ <u>SEQ ID NO:21</u>	*-K-N-S-N-Q-+ <u>SEQ ID NO:22</u>
*-K-N-S-N-Q-L-+ <u>SEQ ID NO:23</u>	
*-K-N-S-N-Q-L-I-K-+ <u>SEQ ID NO:24</u>	
*-K-N-S-N-Q-I-+ <u>SEQ ID NO:25</u>	
*-K-N-S-N-Q-I-K-+ <u>SEQ ID NO:26</u>	
[*-N-S-N-Q-I-+]	
*-E-N-K-E-+ <u>SEQ ID NO:27</u>	*-E-N-K-+ <u>SEQ ID NO:28</u>
*-L-E-N-K-+ <u>SEQ ID NO:29</u>	*-E-N-K-E-A-+ <u>SEQ ID NO:29</u>
*-L-E-N-K-E-A-+ <u>SEQ ID NO:30</u>	*-L-E-N-K-E-+ <u>SEQ ID NO:30</u>
*-K-L-E-N-K-E-+ <u>SEQ ID NO:31</u>	*-K-L-E-N-K-+ <u>SEQ ID NO:31</u>
*-K-L-E-N-K-E-A-+ <u>SEQ ID NO:32</u>	
*-S-G-Q-+ <u>SEQ ID NO:33</u>	
*-S-G-Q-V-L-+ <u>SEQ ID NO:34</u>	
*-D-S-G-Q-V-+ <u>SEQ ID NO:35</u>	
*-S-D-S-G-Q-+ <u>SEQ ID NO:36</u>	
*-S-D-S-G-Q-V-L-+ <u>SEQ ID NO:37</u>	
*-L-S-D-S-G-Q-+ <u>SEQ ID NO:38</u>	
*-L-S-D-S-G-Q-V-+ <u>SEQ ID NO:39</u>	
*-L-S-D-S-G-Q-V-L-+ <u>SEQ ID NO:40</u> and	
*-L-S-D-S-G-Q-V-L-+ <u>SEQ ID NO:6</u> , +	

wherein \* and + designate the amino and carboxyl termini, respectively, and the single letters designate L-amino acids according to the single letter code or wherein \* and + designate the carboxyl and amino termini, respectively and the single letters designate D-amino acids according to the single letter code.

19. (amended) A method of suppressing a human, CD4 T-cell immune response comprising administering to a subject having a medical condition that is ameliorated by the suppression of a CD4 T-cell mediated immune response, an effective amount of a macrocyclic peptidomimetic corresponding to a tetrameric, pentameric or hexameric peptide, having a 10-member ring according to the formula:



wherein:

$R_1$  is the  $\alpha$ -carbon, amino moiety and side chain of the amino terminal amino acid of a tetrameric peptidomimetic or the amino terminal amino acid and the  $\alpha$ -carbon, amine and side chain of the second amino acid of a pentameric or hexameric peptidomimetic;

$R_2$  is the side-chain of the second amino acid of a tetrameric or pentameric peptidomimetic or the side-chain of the third amino acid of a pentameric or hexameric peptidomimetic;

$R_3$  is the side chain of the third amino acid of a tetrameric or pentameric peptidomimetic or the fourth amino acid of a pentameric or hexameric peptidomimetic; and

$R_4$  and 4-N together are the carboxyl terminal amino acid of

a tetrameric or pentameric peptidomimetic, or the carboxyl terminal two amino acids of a pentameric or hexameric peptidomimetic; and the sequence of amino acids to which R<sub>1</sub> through R<sub>4</sub> correspond are selected from the following sequences:

<u>*-N-Q-L-I-+</u>	<u>SEQ ID NO:8</u>	<u>*-N-Q-L-I-K-+</u>	<u>SEQ ID NO:8</u>
<u>*-N-Q-I-K-+</u>	<u>SEQ ID NO:9</u>	<u>*-S-N-Q-L-+</u>	<u>SEQ ID NO:10</u>
<u>*-S-N-Q-L-I-+</u>	<u>SEQ ID NO:11</u>	<u>*-S-N-Q-L-I-K-+</u>	<u>SEQ ID NO:12</u>
<u>*-S-N-Q-I-+</u>	<u>SEQ ID NO:11</u>	<u>*-S-N-Q-L-I-K-+</u>	<u>SEQ ID NO:14</u>
<u>*-N-S-N-Q-+</u>	<u>SEQ ID NO:15</u>	<u>*-N-S-N-Q-L-+</u>	<u>SEQ ID NO:16</u>
<u>*-N-S-N-Q-L-I-+</u>	<u>SEQ ID NO:17</u>	<u>*-N-S-N-Q-I-K-+</u>	<u>SEQ ID NO:19</u>
<u>*-N-S-N-Q-I-+</u>	<u>SEQ ID NO:1</u>	<u>*-K-N-S-N-+</u>	<u>SEQ ID NO:20</u>
<u>*-K-N-S-N-Q-+</u>	<u>SEQ ID NO:21</u>	<u>*-K-N-S-N-Q-L-+</u>	<u>SEQ ID NO:22</u>
<u>*-K-N-S-N-Q-I-+</u>	<u>SEQ ID NO:3</u>	<u>[*-N-S-N-Q-I-+]</u>	
<u>*-E-N-K-E-+</u>	<u>SEQ ID NO:24</u>	<u>*-E-N-K-E-A-+</u>	<u>SEQ ID NO:25</u>
<u>*-L-E-N-K-+</u>	<u>SEQ ID NO:26</u>	<u>*-L-E-N-K-E-+</u>	<u>SEQ ID NO:27</u>
<u>*-L-E-N-K-E-A-+</u>	<u>SEQ ID NO:28</u>	<u>*-K-L-E-N-K-+</u>	<u>SEQ ID NO:29</u>
<u>*-K-L-E-N-K-E-+</u>	<u>SEQ ID NO:30</u>	<u>*-S-G-Q-V-+</u>	<u>SEQ ID NO:31</u>
<u>*-S-G-Q-V-L-+</u>	<u>SEQ ID NO:32</u>	<u>*-D-S-G-Q-+</u>	<u>SEQ ID NO:33</u>
<u>*-D-S-G-Q-V-+</u>	<u>SEQ ID NO:34</u>	<u>*-D-S-G-Q-V-L-+</u>	<u>SEQ ID NO:35</u>
<u>*-S-D-S-G-Q-+</u>	<u>SEQ ID NO:36</u>	<u>*-S-D-S-G-Q-V-+</u>	<u>SEQ ID NO:37</u>
and		<u>*-L-S-D-S-G-Q-+</u>	<u>SEQ ID NO:39</u> ,

wherein \* denotes the amino terminal and + the carboxyl terminal.

#### REMARKS

Claims 1, 2, 3, 6, 7, 17, 18 and 19 have been amended to include the relavent SEQ ID Numbers for each peptide. Claims 1, 6, 17, 18 and 19 have been further amended to delete a duplication in the list of peptides. The specification has been amended to correct obvious typographical errors.